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(54) **Machine for production of packing, in particular for fruit and vegetables**

(57) A forming machine (100) is disclosed, comprising a forming spindle (25) that presses on the bottom (20) of the packing and at least one guide (26) that supports at least one lateral wall (15, 16) of the packing. The guide

(26) comprises a pivot axis (27) to rotate on the corner of the channel (5, 6) identified by the intersection of the base (23; 23B) with the second edge (24; 24B) of the channel, in such a way to rotate the lateral wall (15, 16) of the packing and dispose it on said bottom (20).

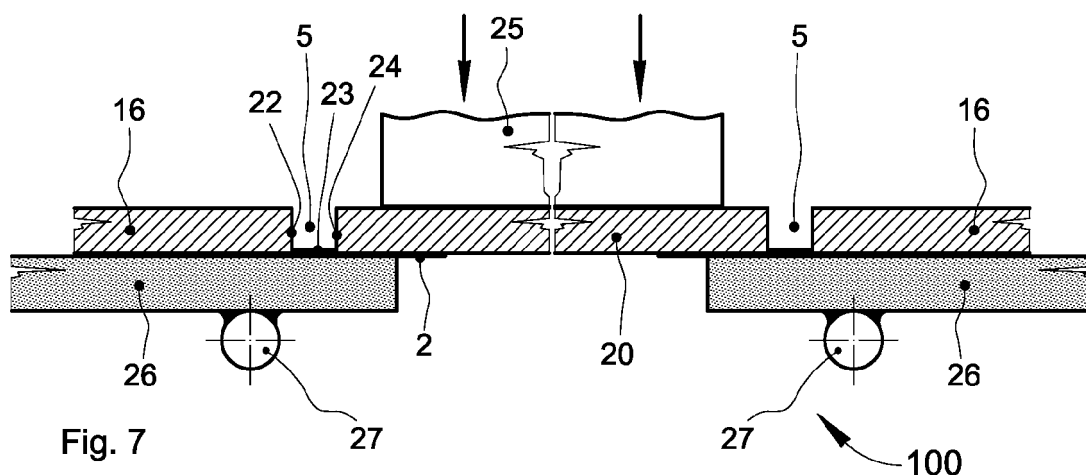


Fig. 7

Description

[0001] The present invention relates to the field of packing made with a sheet or panel of rigid, non-foldable material, with high resistance to vertical compression. Said packing is suitable for any use, and in particular to contain, transport, store and distribute products of any kind, especially foods and/or fruit and vegetables that, due to their fragility, need suitable protection both in massive storage and during transportation from production sites to destination places, including in refrigerated environments.

[0002] Recently, packing obtained from a panel of rigid wood fiber material has been proposed.

[0003] For instance, patent FR2818616 discloses a package formed from a wood fiber panel entirely coated with a sheet of paper, preprinted board on the external side, and eventually reinforced with a plastic film. In some areas of the sheet-panel, V-shaped triangular milled parts are obtained, being limited to the thickness of the panel without cutting the thickness of the coating, which acts as hinge. In such a way the milled parts are the folding points of the panel to form the package.

[0004] Despite the fact that the package is obtained with a rigid panel, it is inadequate both in terms of resistance to vertical compression and practical stacking.

[0005] Fig. 11 shows three packages according to the prior art, in stacked position. Numerals (q3 and q4) are used to indicate the load on the bottom and numerals (R3 and R4) are used to indicate the load on the lateral wall. In fact, having obtained the V-shaped triangular milled parts, it is easy to understand that, when various packages loaded with goods are stacked, as shown in Fig. 11A, load transmission in stacking passes through the hinge represented by the film. In the specific case, the weight is mostly reflected on the film and/or paper.

[0006] To limit such a problem, additional reinforcement film is applied on the board. Moreover, in order to be easily stackable, the heads of the package must be inclined inwards, and this reduces the containment volume. Although triangular milled parts allow for lifting the lateral walls easily during forming, using the coating as hinge, the triangular shape conveys most of the weight of the above containers on the coating (Figs. 11 and 11A), sometimes causing breakage and consequent overturning of the entire stack.

[0007] In consideration of the fact that coating covers the entire external side of the package, it appears evident that reinforcing the hinge implies an additional cost increase that makes such package not competitive.

[0008] Patent EP 1325799 discloses an additional type of package, comprising a container obtained from a single panel of wood fiber or composite material. Some notches are obtained in the panel areas that act as folding for the package. Then, rubber is injected in said notches by means of an injection press and suitable V-shaped triangular mold. In this way, when the mold is removed, after cooling, hinges with V-shaped groove are created,

which allow for folding the various parts of the package and create the volume configuration.

[0009] Also this package is impaired by numerous problems. First of all, the manufacturing process is not simple, being on the contrary complicated and expensive. In fact, it provides for using special equipment with high energy consumption. The injection process must be carried out at high pressure and high temperature conditions and requires a very high force. Another drawback is that it is a slow process, because of the time required to inject rubber and cool it. For the aforementioned reasons, also this type of package is not competitive.

[0010] The aforementioned problems are solved by the package disclosed in FR 1 482 977, which discloses a package comprising a groove with rectangular section disposed between a bottom and a lateral wall of the package. Such a groove is used as folding line to allow the lateral wall to lie on the internal side of the bottom of the package, when the volume configuration is created. However, such package is made manually, with long production time and high costs.

[0011] US2009/0170678 discloses a forming machine for realization of cardboard boxes. Said forming machine provides for fixed arched guides and a forming mandrel that is moved linearly to push a central panel of punched cardboard, thus folding the lateral walls by means of contact with the fixed arched guides. It must be considered that punched cardboard is provided with creasing lines along which the walls are folded. Instead, such a forming machine might not be used to form a package made of rigid panels with notched channels, as the one disclosed in the prior document FR 1 482 977, because it would break said panels.

[0012] No valid process has been so far devised to replace traditional packages composed of a series of wooden strips and angles that are mutually sewn, although their production process is long, complicated and expensive as mentioned above.

[0013] It must be noted that foods and/or fruit and vegetable products are especially fragile, and therefore require package with small size, high mechanical resistance, including in humid environments, and able to guarantee good preservation of products over time and during transportation from production sites to destination places.

[0014] Considering the large quantities of said products that are consumed every day, a high quantity of packing of this type is needed.

[0015] Undoubtedly, sheets-panels of non-folding material (wood, wood fiber, plywood, MDF, etc.) have higher mechanical resistance, which is not comparable with foldable materials, such as cardboard or similar. The difficulty in using non-foldable material in a package made with a sheet-panel, without losing resistance, sturdiness and rigidity features, lies in the realization of a fold that does not impair said features.

[0016] One of the purposes of the present invention is to disclose a machine for production of a new packing

for all uses, in particular to contain and transport food and/or fruit and vegetable products, which combines the typical advantages of packing obtained from rigid materials (first of all, sturdiness, stability and hygienic conditions), with a industrial production process, which is inexpensive, and typical of flexible materials.

[0017] This purpose is achieved with the machine of the invention.

[0018] The forming machine of the invention comprises:

- a forming spindle that presses on the bottom of the packing, and
- at least one guide that supports at least one lateral wall of the packing. Said guide comprises a pivot axis to rotate on the corner of the channel identified by the intersection of the base with the second edge of the channel, in such a way to make the corresponding lateral wall of the packing rotate in order to dispose it on said bottom.

[0019] These and additional characteristics of the present invention will appear evident from the description below, with reference to the enclosed drawings, which show some preferred embodiments of the invention for purposes of illustration only and not in a limiting sense, wherein:

Fig. 1 is a plan view of the external side of a plane panel on which film strips are applied to realize a packing of known type.

Fig. 2 is a plan view of the panel of Fig. 1, showing the parts affected by shearing operation.

Fig. 3 is a plan view of the panel of Fig. 2 after shearing and cleaning.

Fig. 4 is a plan view of the panel of Fig. 3 after realization of folding channels in transversal and longitudinal direction.

Fig. 5 is a cross-sectional view of Fig. 3 along sectional plane V-V'.

Fig. 6 is a cross-sectional view of Fig. 4 along sectional plane VI-VI'.

Fig. 6A is the same view as Fig. 6, except for it shows a different version of the channel obtained in correspondence of the glued film.

Fig. 7 is a cross-sectional view of the packing along the sectional plane VII-VII' of Fig. 4, wherein the packing is spread out on a forming machine of the invention.

Figs. 7A and 7B are the same views as Fig. 7, showing two successive steps for creating the volume of the packing of the invention.

Fig. 8 is a perspective view of the packing in volume configuration.

Fig. 8A is a longitudinal sectional view of the packing of Fig. 8.

Fig. 8B is an enlarged view of the detail contained in circle B of Fig. 8A.

Fig. 8C is a cross-sectional view of the packing of Fig. 8.

Fig. 8D is an enlarged view of the detail contained in circle D of Fig. 8C.

Fig. 9 is a perspective view of the packing of Fig. 8 in stacked position with mutual fitting.

Fig. 10 is a partially sectional side view of packing of Fig. 9 in stacked position.

Fig. 10A is an enlarged view of a detail of Fig. 10.

Fig. 11 is a partially sectional side view of three packages stacked according to the prior art (patent FR2818616).

Fig. 11A is an enlarged view of a detail of Fig. 11.

Fig. 12 is a plan view as Fig. 2, except for it shows a different version of the packing.

Fig. 13 is a perspective view as Fig. 8, which shows the volume development of packing of Fig. 12.

[0020] Referring to Figs. 1 to 9, the manufacturing process of a packing is disclosed. Fig. 8 shows the packing in volume configuration, which is generally referred to with numeral (27). Said packing (27) comprises a bottom (20), two long or longitudinal lateral walls (15) and two short or transversal lateral walls (16) that rise from the bottom (20). Each short lateral wall (16) is connected with two end wings (17) that are folded at right angle in order to lie on the internal side of the bottom (20), touching the internal side of the long lateral walls (15).

[0021] Optionally, two angular wings (18) extend horizontally on the upper edge of the short lateral sides (16). Two connection wings (19) extend vertically at the ends of the angular wings (18).

[0022] Referring to Fig. 1, the packing (27) is obtained from a sheet or panel (1) with basically rectangular shape. The panel (1) is made of non-foldable material, such as wood, wood fiber, plywood, MDF, composite material and similar. The dimensions of the panel (1) are at least equal to the development of the packing to be realized in plane form. The thickness of the panel (1) is about 3.2 mm.

[0023] Starting from a stack of panels (1), the production process provides for any means able to take and transfer in sequence one panel at a time, in order to carry out the various machining operations.

[0024] A first operation consists in the application of a film (2, 3 and 4) on the external side of the panel (1), that is to say the outward-facing side. The film is glued with any suitable means, for example a taping machine or an automatic plastic coating machine. Preferably, flexible film (2, 3, 4) is used only in the areas where the various parts of the packing must be folded, being sufficient to keep the various parts of the packing together for material economy purposes. For different reasons known to the experts of the field, said film can be extended to the entire surface of the panel.

[0025] According to a version not shown in the enclosed drawings, it is possible to apply an adhesive or non-adhesive film, at least sufficient to cover all the areas that will be affected by folds. Said film can be of any

suitable flexible material, such as linen tape, paper, board, plastic film, etc. If the film is not adhesive, any suitable means of known type is used to apply glue on the film and/or sheet-panel, in order for it to be glued.

[0026] Referring to Fig. 1, four transversal film strips (3, 2) are applied on the panel (1) in parallel position, in such a way to define the short lateral walls (16) and the horizontal angular wings (18). Then, two longitudinal film strips (4) are applied on the panel (1), extending for the entire length of the panel, near the longitudinal edges of the panel in such a way to overlap the ends of the transversal strips (2, 3). The longitudinal strips (4) define the two long lateral walls (15).

[0027] Referring to Fig. 2, the next operation consists in a shearing operation of the panel, which can be carried out with any suitable cutting means of known type, for example by means of shears, rotary or flat press, and similar. With such operation the panel (1) is provided with multiple notches (10, 10B, 10C, 10D) crossing the entire thickness of the panel (1), including the glued film (2, 3, 4), limitedly to the areas where the film coincides with shearing.

[0028] The notches (10) are obtained in correspondence of the corners of the panel and extend until the lateral wall (16). The notches (10D) are obtained in correspondence of the transversal strips (2) and extend from the edge of the panel until the lateral wall (16). The notches (10B) are obtained on the short edges of the panel. The notches (10C) are obtained in correspondence of the central portion of the strips (2). During this operation, a plurality of notches (10A) is obtained in correspondence of the bottom panel and of the lateral walls of the packing.

[0029] Referring to Fig. 3, the waste from the notches is removed in such a way that, after such operation, the panel (1) is only composed of useful parts. Consequently, corresponding slots (13, 12) are obtained in correspondence of the notches (10, 10D).

[0030] The width of the slots (12, 13) is approximately two times the thickness of the panel (1) and their depth reaches the short lateral wall (16). If the end of the slots (12, 13) has a semicircle shape, it can invade the short lateral wall (16). The slots (12) separate the long lateral walls (15) from the end wings (17). The slots (13) separate the end wings (17) from the connection wings (19).

[0031] In correspondence of the notches (10B) projections (14) are obtained, extending vertically from the short lateral walls (Fig. 8). From the notches (10C) windows (11) are obtained, being situated at the base of the short lateral walls (16) (Fig. 8).

[0032] The windows (11) have length for instance from 70 to 90 mm and width from approximately 25 to 35 mm. The projections (14) of the short lateral walls (16) have slightly lower length than the windows (11) and height or projection of about 10 to 15 mm.

[0033] In this way, when the packing (27) is stacked, the projections (14) are inserted in the windows (11) of the above packing (Fig. 9), both with centering function and prevention function against the lateral movement of

a packing with respect to the other. Said windows (11) may have higher width than the projections (14) on the side of the short lateral walls (16), in order to act as holding handles in addition to air vents for the goods.

[0034] From the notches (10A) holes (50) are obtained and used to ensure transpiration of the goods contained in the packing.

[0035] Referring to Fig. 4, the process also comprises a milling operation on the internal side of the panel (1), that is to say on the side opposite the one where the strips (2, 3, 4) are applied. Longitudinal milling is carried out to obtain longitudinal channels (6, 8, 9) and transversal milling to obtain transversal channels (5, 7). The longitudinal channel (8) is staggered with respect to the other longitudinal channels (6 and 9) for a value corresponding to approximately the thickness of the panel (1).

[0036] The channel (5) separates the central rectangle (20) that is the bottom of the container, from the short lateral walls (16) of the container.

[0037] The channel (6) separates the bottom (20) of the container from the long lateral walls (15) of the container.

[0038] The channel (8) separates the short lateral walls (16) from the end wings (17) that are also the connection areas for the volume development of the container.

[0039] The channel (9) separates the angular wings (18), which are a valid reinforcement angle of the packing and make stacking easier, from the connection wings (19).

[0040] The channel (7) separates the short lateral walls (16) from the angular wings (18).

[0041] All said channels (5 - 9) coincide with the folding lines and can be obtained with any suitable cutting tool, such as a mill, or disk or similar.

[0042] Fig. 4 shows a complete packing (21) in plane configuration.

[0043] Fig. 5 shows the section of the panel (1) in correspondence of the film strip (2) before milling.

[0044] Fig. 6 shows the channel (5) in correspondence of the strip (2) that separates the bottom (20) from the short lateral wall (16). As shown in Fig. 6, the width and depth of the channel (5) are basically the same. Said depth of the channel affects most of the thickness of the panel (1), without reaching the glued film (2). Although Fig. 6 only shows the channel (5), all other channels (7, 6, 8, 9) can have the same configuration as channel (5).

[0045] So, each channel has a base (23), a first lateral edge (22) on the wall (16) to be rotated and a second lateral edge (24) on the bottom (20) adapted to support the wall that is being rotated.

[0046] Between the base (23) of the channel and the glued film (2), a portion of material (23') of the panel extends, which advantageously has a barely sufficient thickness for the panel (1) not to fold in correspondence of said channels, without exerting a force. This allows for manipulating and/or transporting the packing (21) in plane configuration to another place, for volume development, without special care.

[0047] Said portion of material (23') between glued film and base (23) of the channel will be determined by the type and thickness of panel used.

[0048] For example, in a panel of wood fiber material with 3.2mm thickness, the portion of material (23') between the plane base (23) of the channel and the glued film (2, 3, 4) can be from approximately 0.3 to 1 mm with adhesive film with thickness approximately from 0.02 to 0.05 mm.

[0049] The edge (22) of the short lateral wall (16) to be rotated has such a geometry that, after rotation, the short lateral wall (16) lies on the internal side of the bottom (20) of the packing (Fig. 8B). The base (23) of the channel is parallel and adjacent to the edge (24) of the bottom (20).

[0050] Fig. 6A shows a different version wherein the portion of material (23') has decreasing thickness from the first edge (22) to the second edge (24B). Consequently, the base (23B) of the channel is slightly inclined and the second edge (24B) of the channel forms an angle of approximately 90° with respect to the inclined base (23B).

[0051] This type of channel can additionally facilitate folding during volume development and likewise allows for rotation of the short lateral wall (16) until the first edge (22) of the channel lies on the internal side of the bottom (20) of the packing, whereas the inclined base (23B) is parallel and adjacent to the second edge (24B) of the channel (5).

[0052] In the drawings the first edge (22) is plane and orthogonal to the surface of the lateral wall (16). However, the base (23; 23B) of the channel, the edges (22, 24; 24B) and the area of the internal side of the bottom (20) that will be affected by contact with the first edge (22) can have different geometrical configurations that are not shown in the drawings. For example, the first edge (22) can have a convex profile and the portion of the internal side of the bottom panel receiving the edge (22) can have a concave profile.

[0053] The first edge (22) must have such geometry that, following to the rotation of the short lateral wall (16), it allows the short lateral wall (16) to lie on the internal side of the bottom (20) of the packing, whereas the base (23) of the channel is parallel and adjacent to the edge (24) of the bottom (20).

[0054] The geometry of said folding channels of the panel allows the packing of the invention, in volume development, to have a configuration in which both the lateral walls (15 and 16) and the end wings (17) lie on the internal side of the bottom (20), all of them contributing to load transmission during stacking. Fig. 10 shows three stacked containers, using numerals (q1, q2) to indicate loads on the bottoms (20) of the first two containers and numerals (R1 and R2) to indicate loads on the lateral walls (16) of the first two containers.

[0055] As shown in Fig. 10A, such a packing is able to ensure load transmission during stacking, practically imperceptibly affecting the glued film (2) that is only responsible for keeping the various parts together.

[0056] Through the realization of said channels, the process allows for advantageously obtaining all the necessary components for the panel (1) to be a high-resistance container (21) in plane configuration.

[0057] The completion of the packing from plane configuration (21) (Fig. 4) to development configuration (27) (Fig. 8) can be also carried out in the place of use, with considerable economic convenience in transportation and storage.

[0058] Referring to Figs. 7, 7A and 7B, the volume configuration of the packing can be obtained with an automatic forming machine according to the invention, which is generally indicated with numeral (100).

[0059] The forming machine (100) comprises a forming spindle (25) and a plurality of forming guides (26) composed of plane plates that rotate around corresponding pivot axes (27). The rotation of the forming guides (26) is such to fold the short lateral walls (16) of the packing in correspondence of the corner between the base (23) of the channel and the edge (24) of the bottom (20). The forming spindle (25) is positioned on the bottom (20) of the packing and the short lateral walls (16) are positioned on the forming guides (26). By vertically pushing the spindle (25) downwards, the forming guides (26) are automatically rotated, allowing for rotation of the short lateral walls (16) that are disposed on the bottom (20) (Fig. 7B).

[0060] The forming guides (26) make a 90° rotation around the pivot axes (27).

[0061] The position of the pivot axes (27) has been studied according to the thickness of the guides (26) so that, when the guide (26) is rotated in vertical position, its surface touches the edge (24) of the bottom (20), wherein the adhesive strip and portion of base material are interposed between edge and guide, thus ensuring perfect vertical position of the short lateral wall (16). The forming guides (26) are adapted to support the short lateral walls (16) during folding on the corner of the channel identified by the intersection of the base (23) with the edge (24).

[0062] With 90° rotation the forming guides (26) are also adapted to position said short lateral walls (16) in perpendicular position on the bottom (20), the base (23) of the channel in parallel adjacent position to the edge (24), and the edge (22) on the internal side of the bottom (20) of the packing.

[0063] Figs. 8, 8A, 8B, 8C and 8D show the volume development of the packing and relevant fixing through wings (17, 19) and long lateral walls (15) in an automatic machine.

[0064] While the packing (21) (Fig. 4) in plane configuration is transferred onto the forming station, adhesive, such as quick-setting glue, is applied in the affected areas. Forming starts by folding the end wings (17) by approximately 90°, then the short lateral walls (16) are folded by 90° to be disposed perpendicularly with the first edge (22) of the channel (5), lying on the internal side of the bottom (20) of the packing. Simultaneously, also the

end wings (17) are disposed in perpendicular position on the internal side of the bottom (20), and then the long lateral walls (15) are folded by 90° so that they are perpendicular on the bottom (20), with the edge (22) of the channel (6) on the internal side of the bottom (20) of the packing.

[0065] To ensure higher stability and easier stacking, the packing can be provided with angular wings (18) that are then folded by 90° to be disposed in horizontal position on the short lateral walls (16) and end wings (17); finally, the fixing wings (19) are folded by 90° to be disposed against the end wings (17) for fixing.

[0066] After a slight pressure in correspondence of the areas where glue was applied, the packing is ejected from the forming machine in volume configuration, thus being either ready for stacking or use.

[0067] Evidently, the end wings (17) can be fixed to the long lateral walls (15) in the contact area with any suitable means, such as glue, sewing, riveting and similar; moreover, when the packing is provided with angular wings (18), also the wings (19) can be fixed to the end wings (17) in the contact area with any suitable means, such as glue, sewing, riveting and similar.

[0068] Figs 12 and 13 shows a simplification embodiment of the packing of the invention, wherein the same elements are indicated with the same numerals, omitting their detailed description.

[0069] In said embodiment the angular wings (18), the fixing wings (19), without glued film (3) and the transversal channel (7) have been eliminated. As shown in Fig. 12, notches (10, 10B) have been replaced with notches (10') in correspondence of the short edges of the panel (1) and notches (10D) have been replaced with straight notches (10E).

[0070] To make stacking easier and reinforce the packing, additional elements, also of different material, can be provided, having the same functions as the horizontal wings (18) and connection wings (19). Or, still with reference to the aforementioned packing, to make stacking easier, the short lateral walls (16) can be inclined slightly, for example by approximately 2 to 5 degrees, towards the inside of the container, together with the end wings (17) through inclination of notches (10E) (Fig. 13).

[0071] In this way the slots obtained from the notches (10E) can be made with conical shape with equidistant opening to the opening of said slots. The sides of the end wings (17) corresponding to the notches (10E, 10') must have identical inclination, so that, once the packing is in volume configuration, these same sides are parallel to the bottom (20). The same slight inclination can be given to the edge (22) (Fig. 6A) of the channel (5) that lies on the internal side of the bottom (20) of the packing. In such a case, the openings (11) must be slightly moved, for example by approximately 2 to 10 mm, towards the centre of the bottom (20) to receive the projections (14) during stacking.

[0072] According to an additional version not shown in the enclosed drawings, instead of making the channel

(6) and/or the folding channel (8) with the geometry shown in Figs 6 and/or 6A, a channel with triangular shape can be made, considering that most of the load during stacking is transmitted through the short lateral walls (16) and the end wings (17), as shown in Figs. 10 and 10A.

[0073] According to an additional version not shown in the drawings, instead of being divided, the angular wings (18) could be united and configured as a pair using the material 10B (Fig. 2) of the same panel (1) with a variation on the shearing mold, keeping the projections (14).

[0074] According to an additional version not shown in the enclosed drawings, the end wings (17) can be provided with one or more folding channels parallel to the same channel (8), being suitably provided with glued film and obtained in such a way that the end wing (17) is disposed partially side-by-side with the long lateral wall (15) and partially side-by-side with the short lateral wall (16), thus forming an angular reinforcement to be then fixed to the lateral walls with any suitable means.

[0075] Also the end wing (17) can be extended to perform the same function as the projections (14); in such a case, openings must be obtained on the bottom (20) in correspondence of the extension of the wings (17) to receive them and collaborate with them during stacking, performing the function of openings (11).

[0076] It appears evident that the process herein described is especially simple and inexpensive, since it requires no special equipment, no high energy consumption, no skilled labor and because it allows for obtaining a packing from a panel (1) of non-foldable material (wood, wood fiber, plywood, MDF, composite material, etc.) that is especially resistant to compression caused by vertical loads during stacking.

[0077] Moreover, it appears evident that the packing of the invention is the first one to be especially suitable and convenient to contain products of any kind, especially foods and/or fruit and vegetables that, due to their fragility, need suitable protection both in massive storage in cold rooms and during transportation from production sites to destination places. After the product contained in the packing has been unloaded, the packing is brought back to plane configuration to reduce volume, reused whenever possible or recycled. The packing described herein can be used in the field of packing for all uses.

Claims

1. Forming machine (100) for volume development of a packing obtained from a sheet or panel (1) of non-foldable material, said packing having a plane configuration (21) and a volume configuration (27), when the packing is in the volume configuration it comprises a bottom (20), a plurality of lateral walls (15, 16) and a plurality of end wings (17) connected with at least one lateral wall (16), said packing also comprising:

- at least one flexible film (2, 3, 4) on the external side of the panel (1), which is designed to keep the various parts together after the succeeding operations and
- a plurality of channels (5, 6, 8) on the internal side of the panel, which coincide with the folding lines that separate the bottom (20) from the lateral walls (15, 16) and the end wings (17) from the lateral walls (16),
- at least one of the channels (5, 6) is composed of a first edge (22) on the lateral wall (15, 16), a second edge (24; 24B) on the bottom (20) and a base (23; 23B) disposed between the two edges above said flexible film (2, 4), wherein the distance between said two edges (22, 24; 24B) of the channel is such that the lateral wall (15, 16) rests on the internal side of the bottom (20) of the packing during the volume development of the packing,

said forming machine (100) comprising:

- a forming spindle (25) that presses on the bottom (20) of the packing, and
- at least one guide (26) that supports at least one lateral wall (15, 16) of the packing,

characterized in that

said guide (26) comprises a pivot axis (27) to rotate on the corner of the channel (5, 6) identified by the intersection of the base (23; 23B) with the second edge (24; 24B) of the channel, in such a way to make the corresponding lateral wall (15, 16) of the packing rotate in order to dispose it on said bottom (20).

2. Forming machine according to claim 1, **characterized in that** said guides (26) of the machine are planar.
3. Forming machine according to claim 1 or 2, **characterized in that** said guides (26) are arranged to rotate of 90°, passing from an horizontal position to a vertical position and vice versa.
4. Forming machine according to anyone of the preceding claims, **characterized in that** said pivot axis (27) are spaced from the edge (24) of the bottom (20) of the packing, according to the thickness of the guides (26) so that, when the guide (26) is rotated in vertical position, the surface of the guide abuts against to the edge (24) of the bottom (20), wherein the flexible film (2, 3, 4) and the material of the base (23; 23B) are interposed between the edge (24) and the guide (26), assuring a perfect vertical arrangement of the lateral wall (16) of the packing.

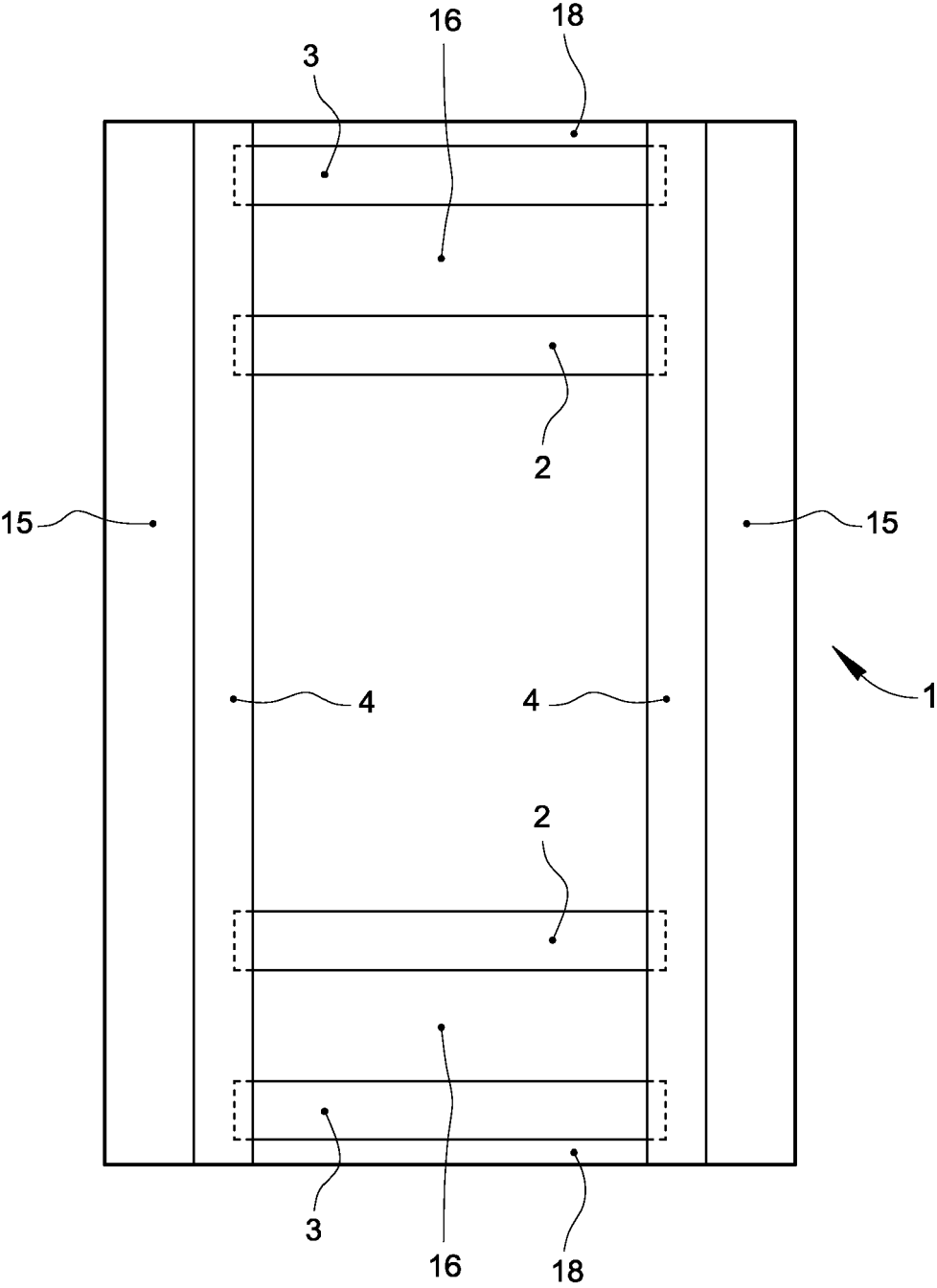


Fig. 1

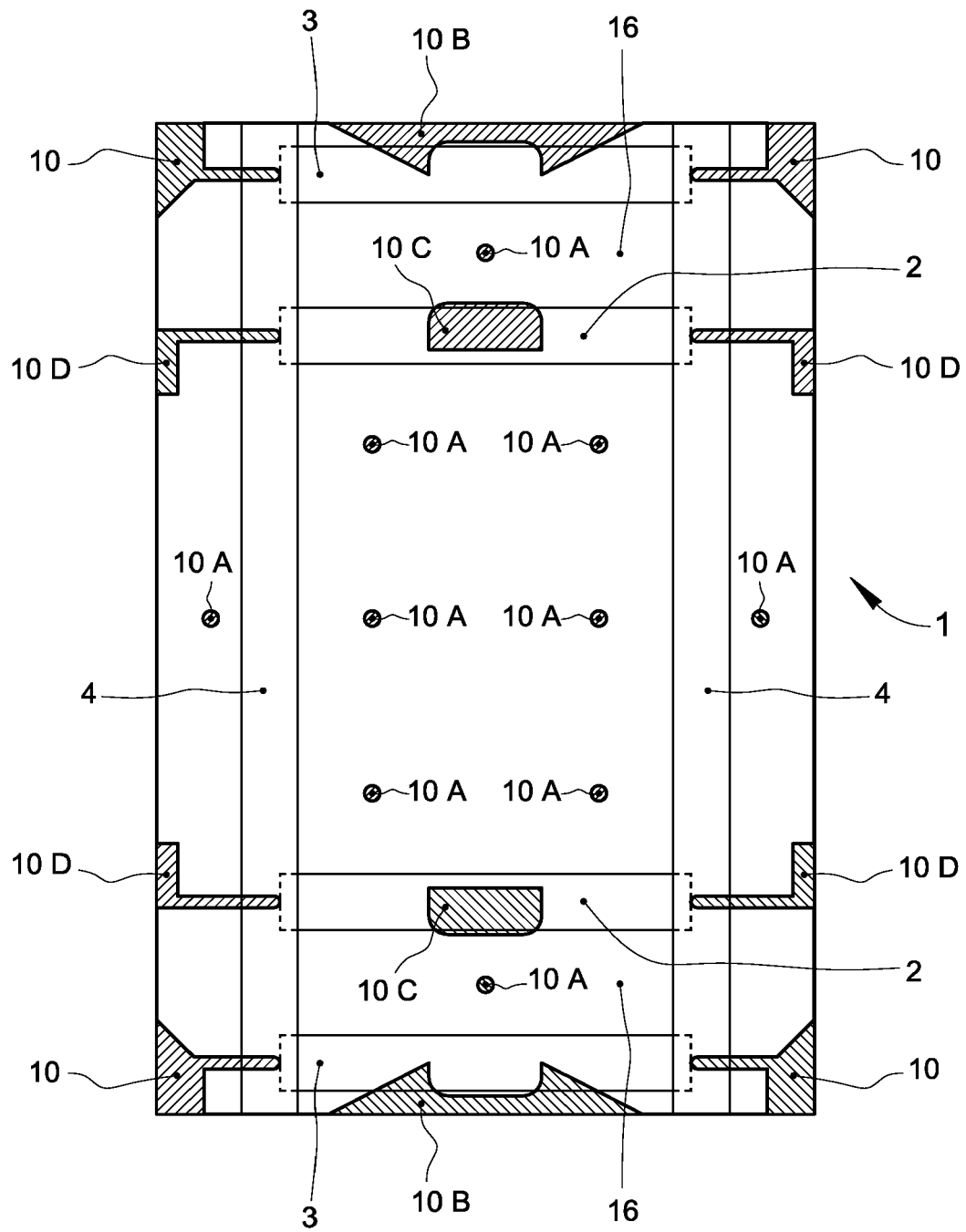


Fig. 2

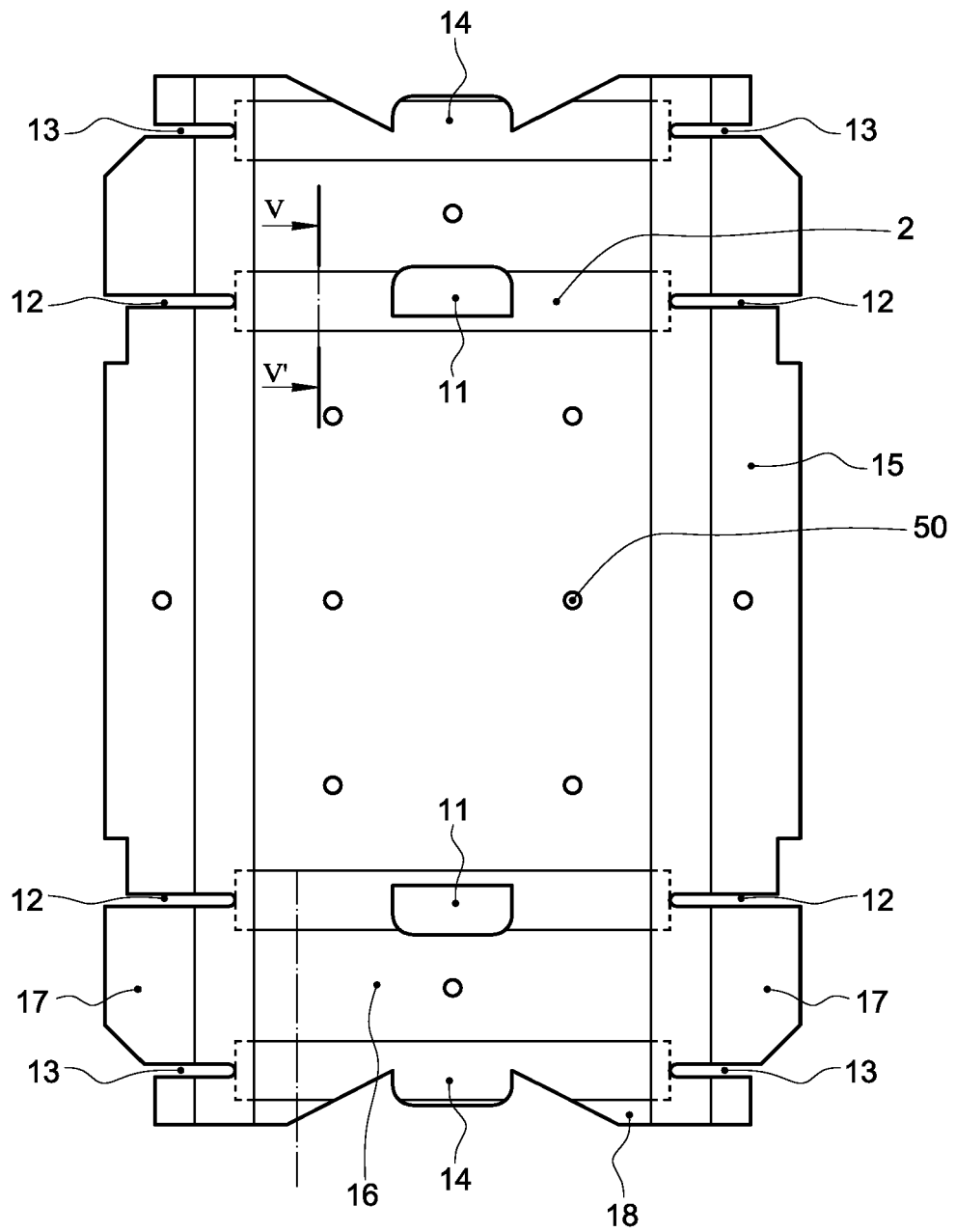


Fig. 3

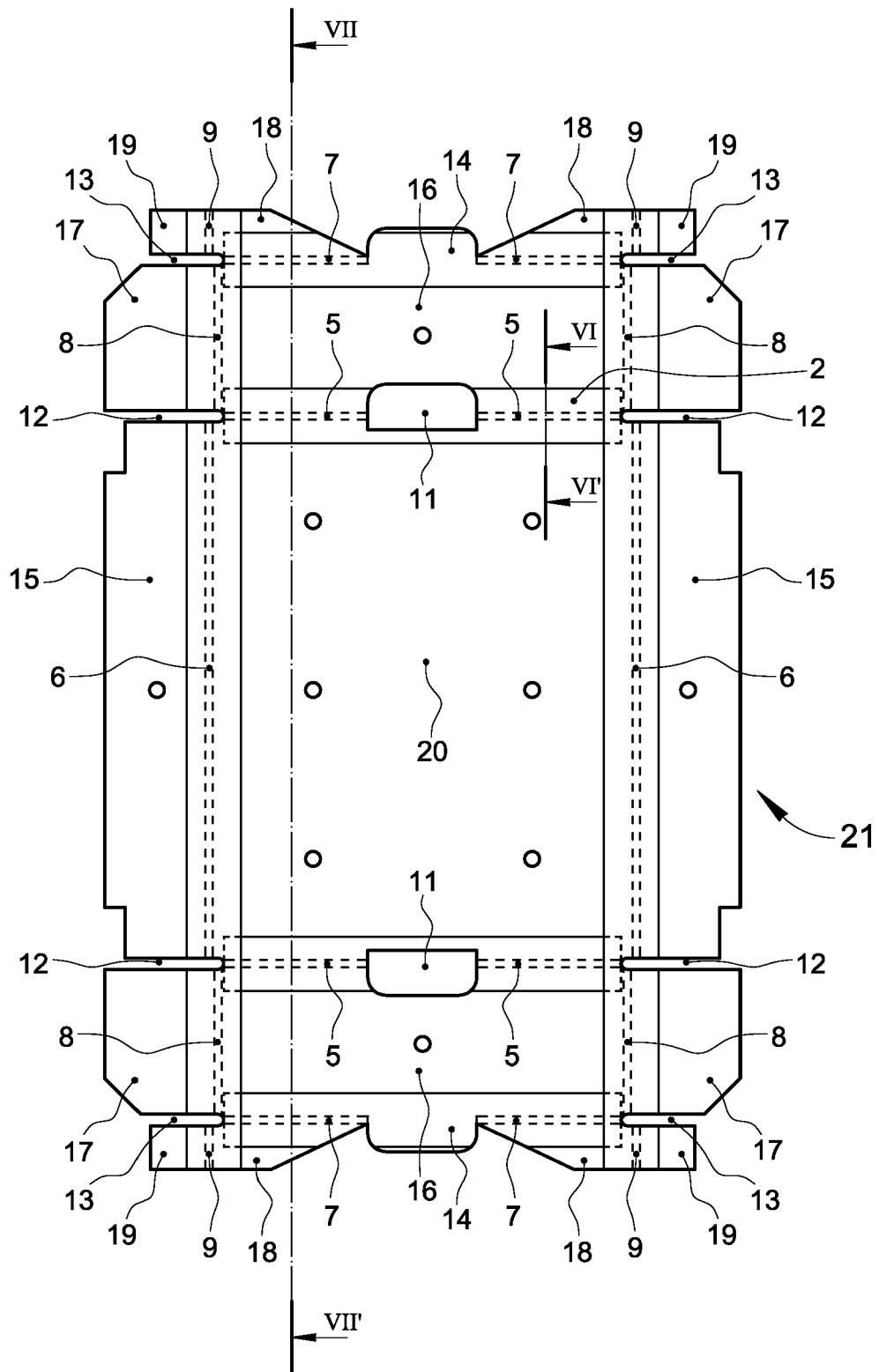
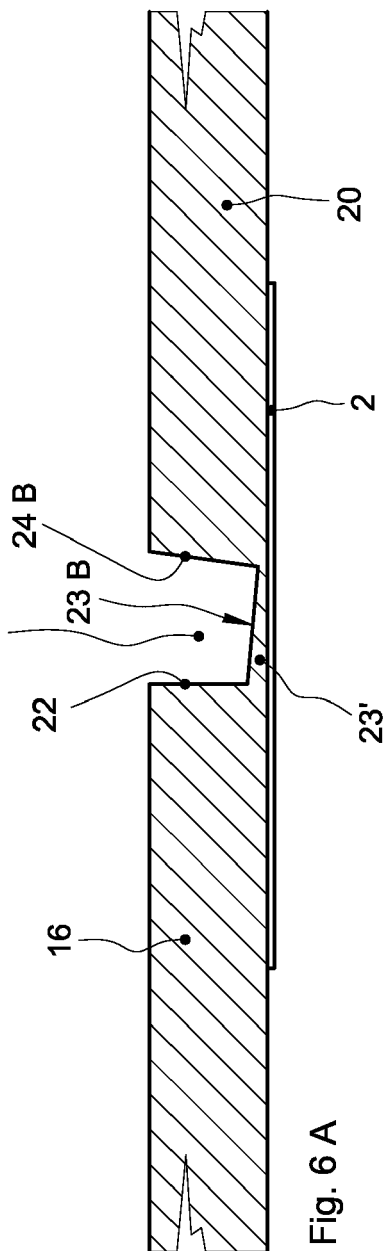
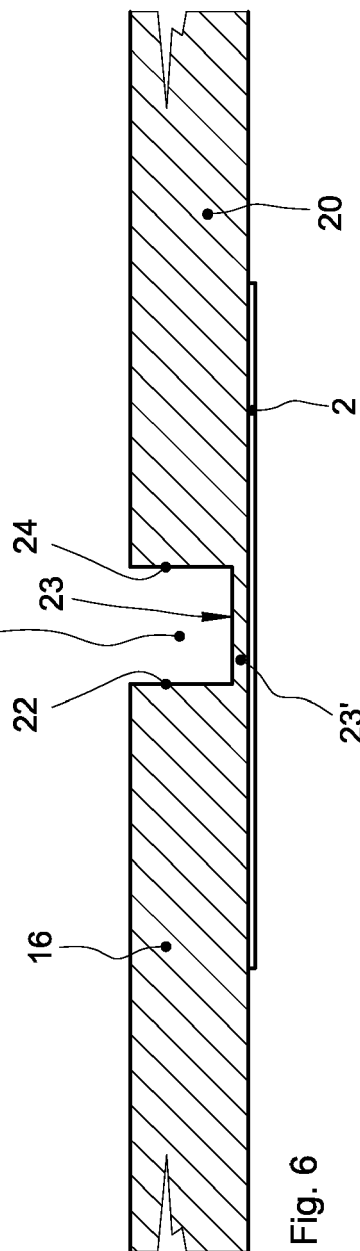
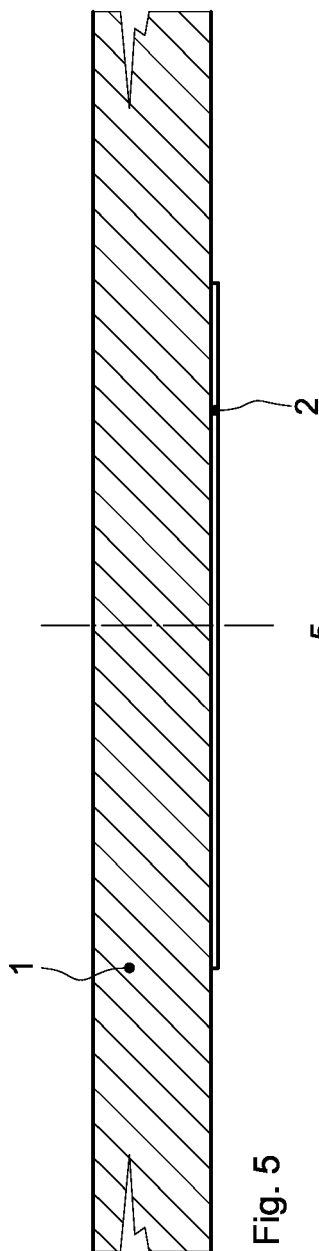
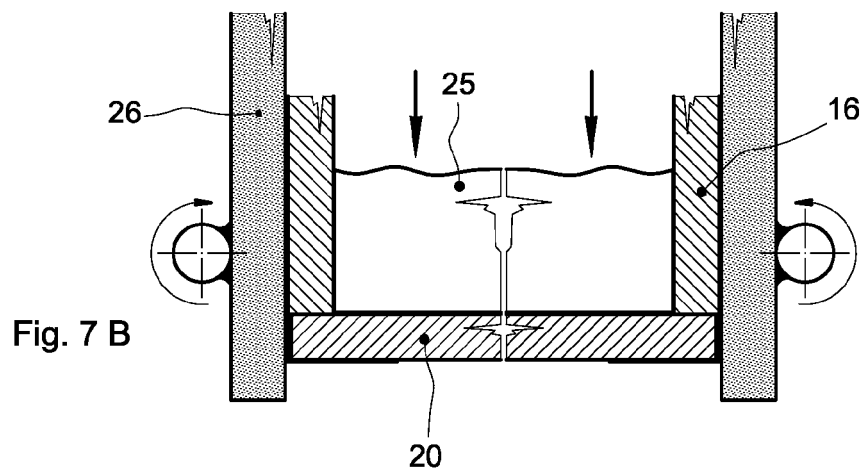
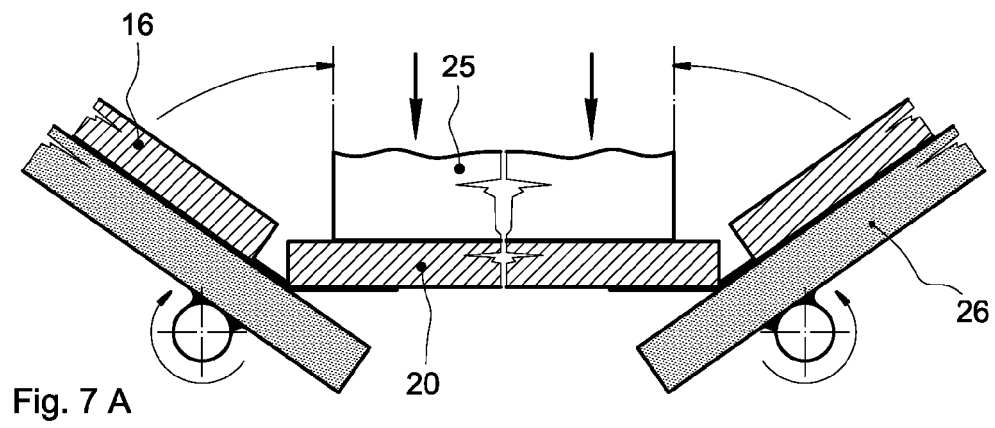
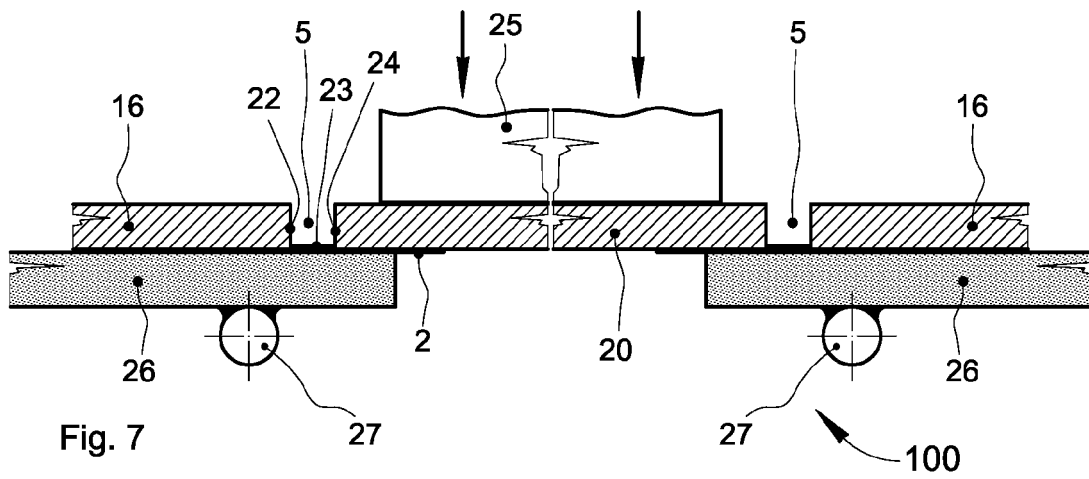


Fig. 4





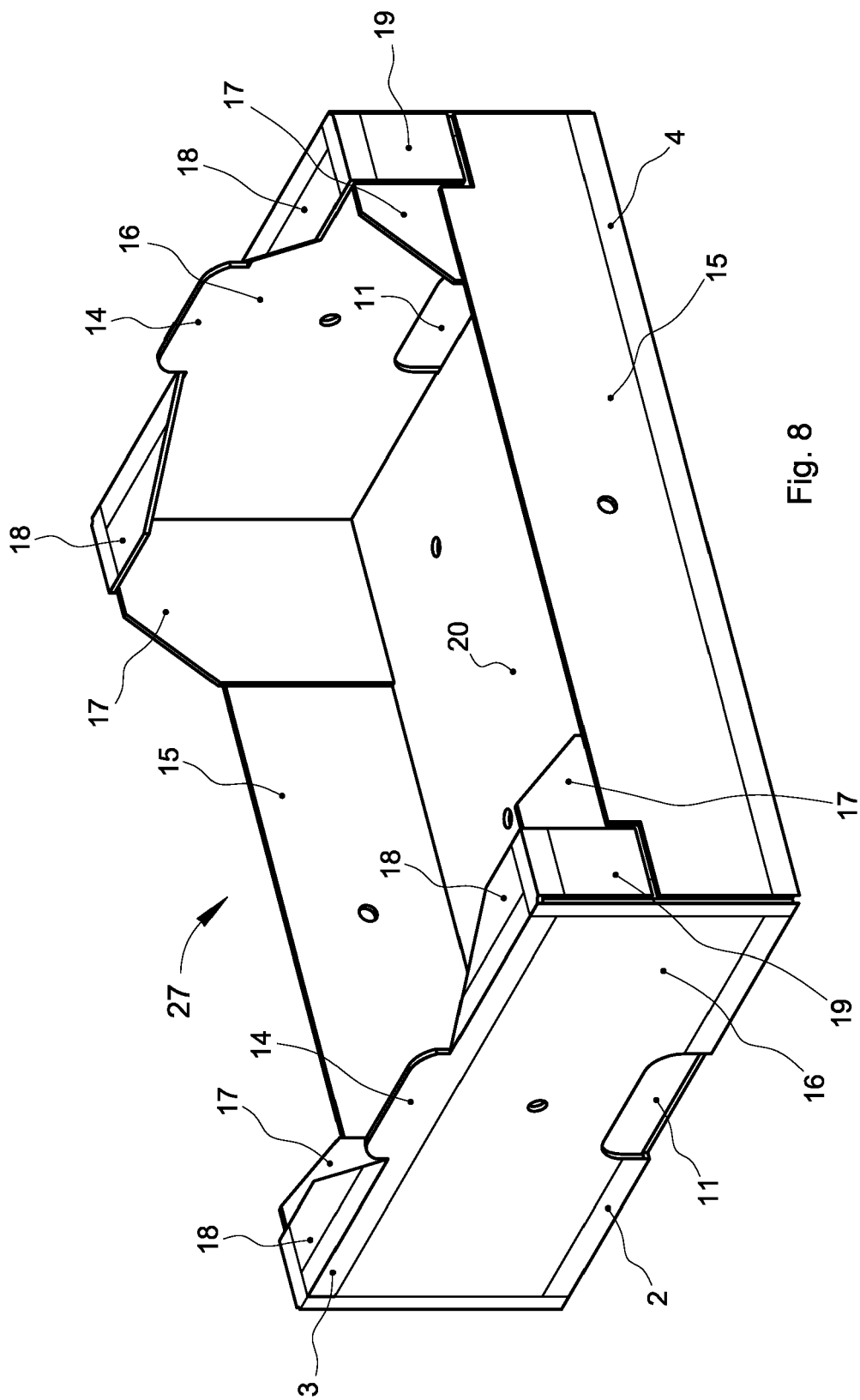
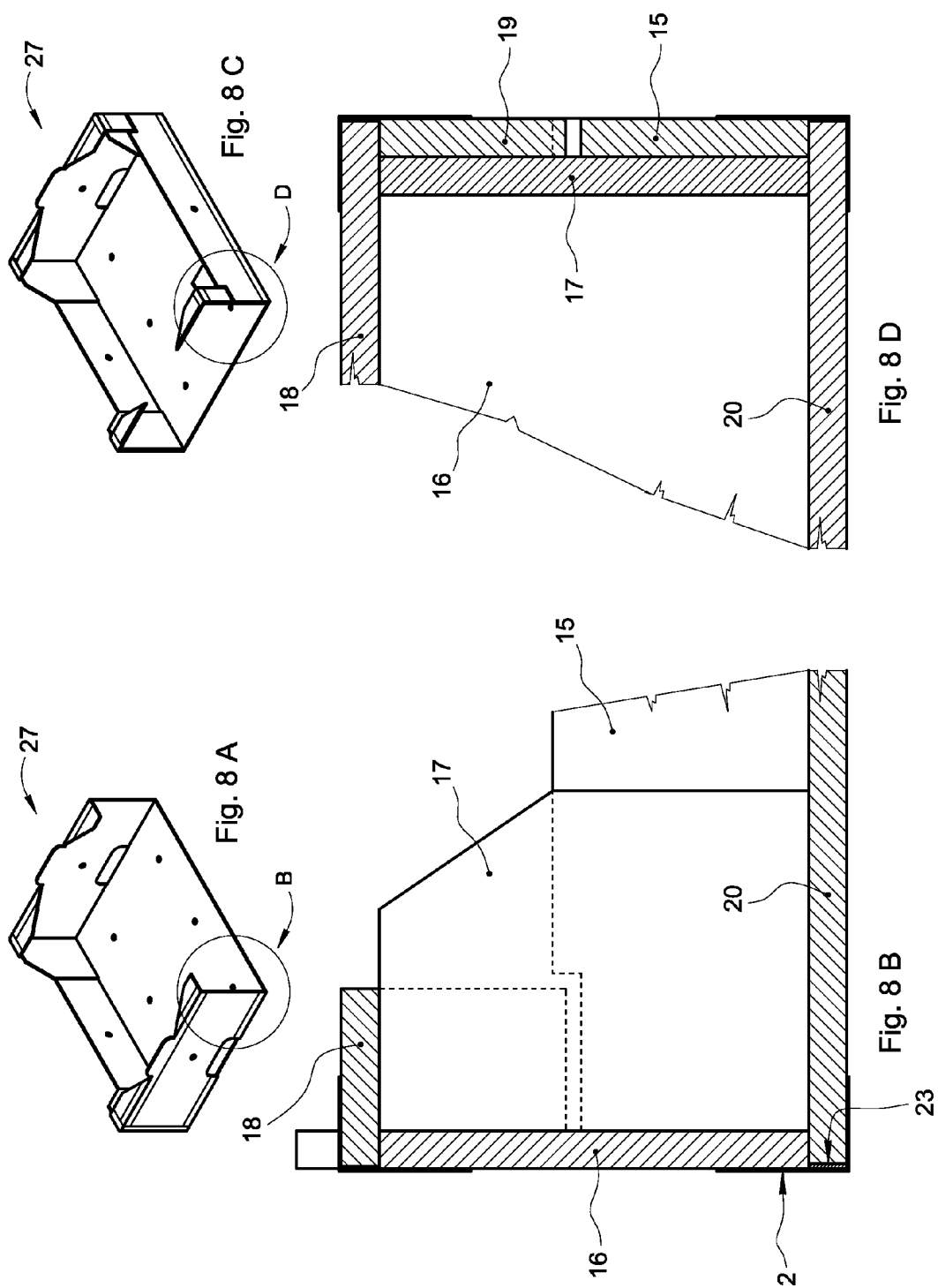


Fig. 8



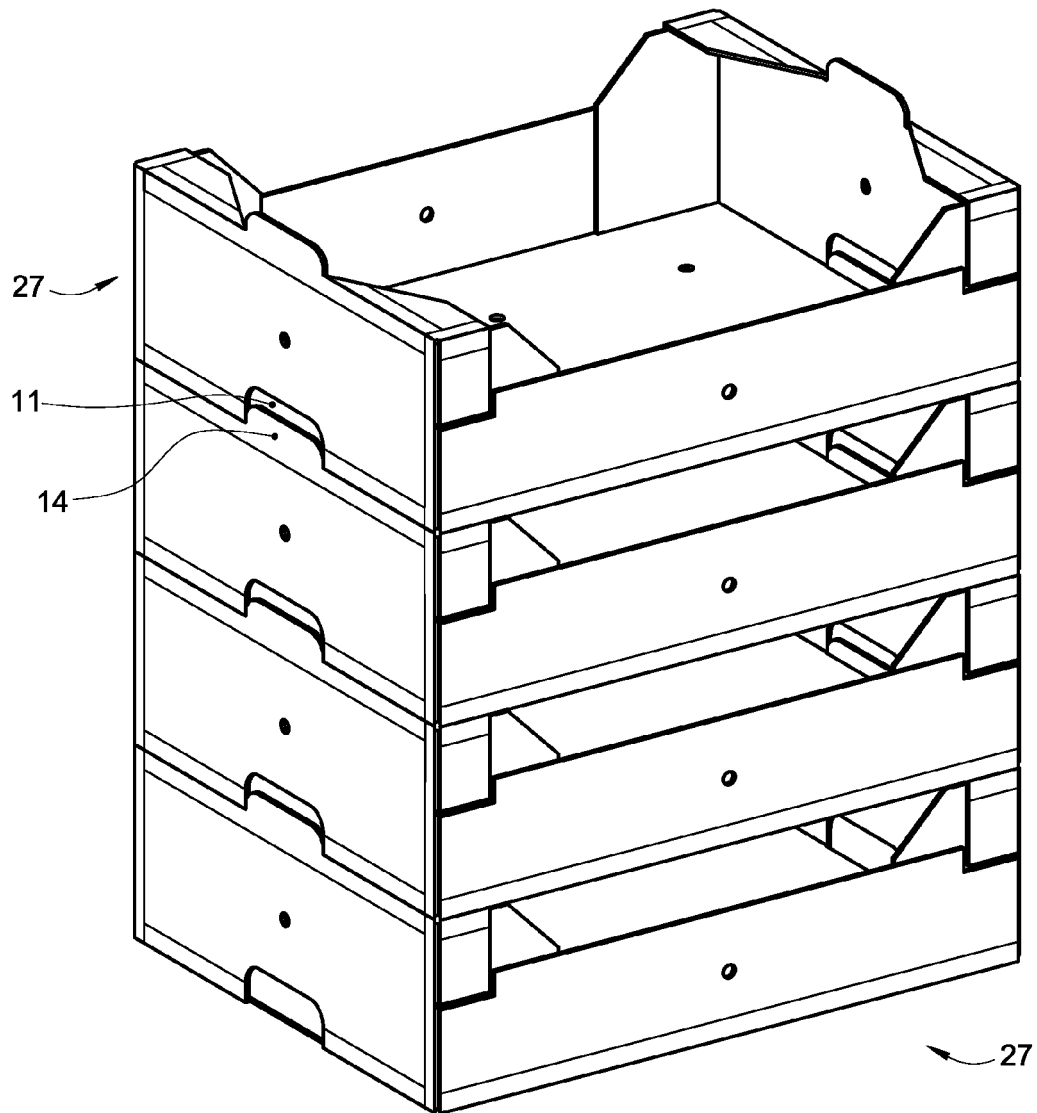


Fig. 9

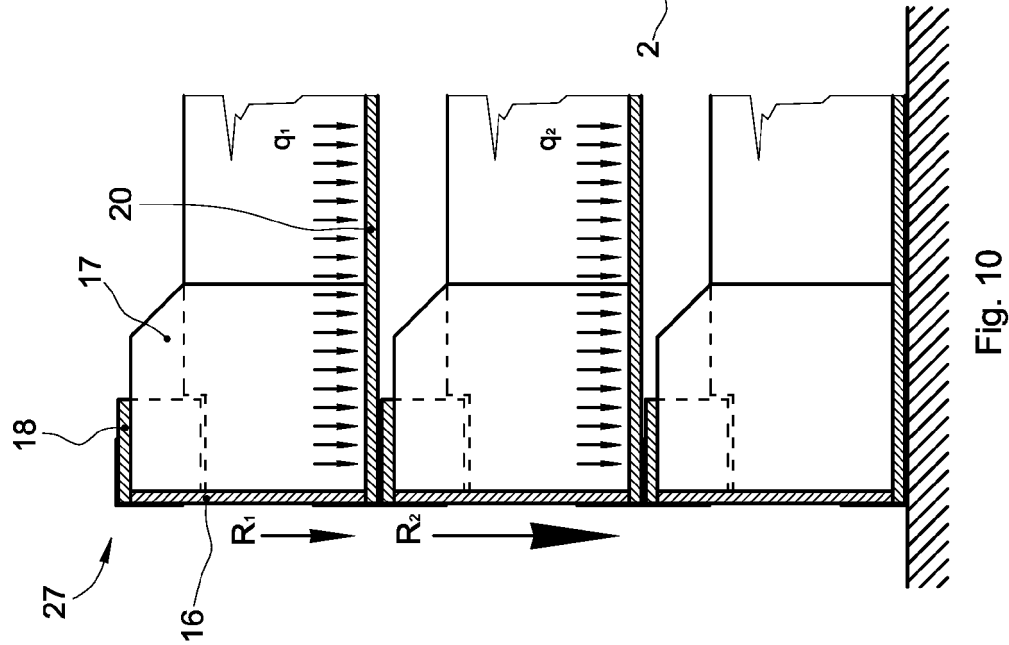


Fig. 10

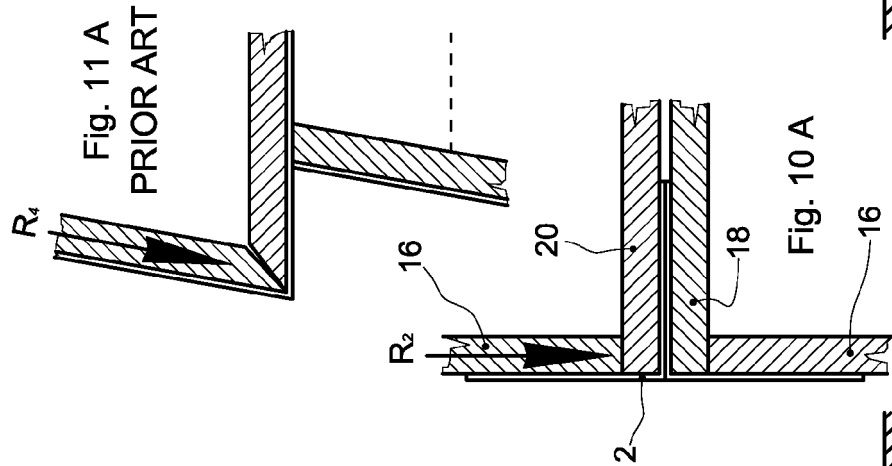


Fig. 10 A

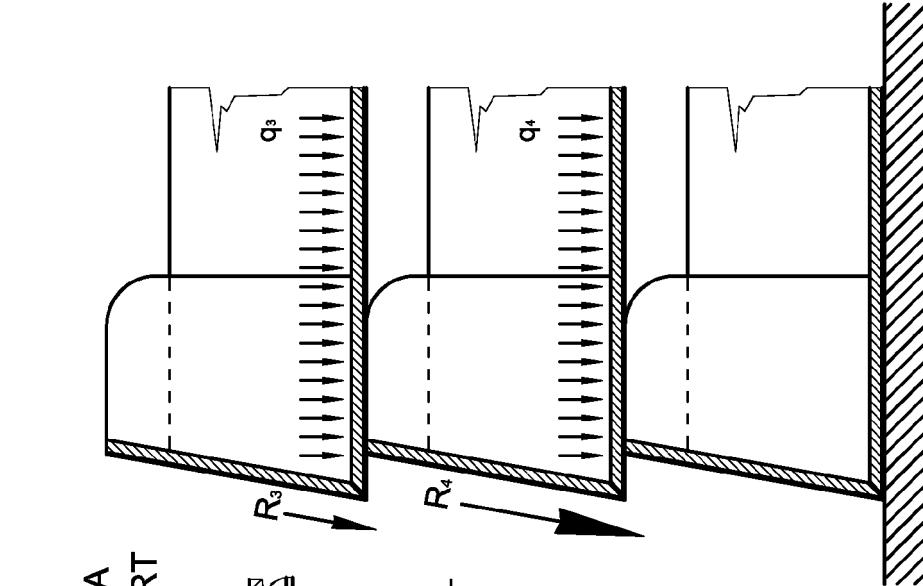


Fig. 11
PRIOR ART

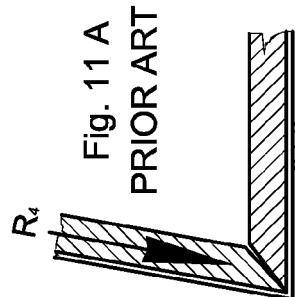


Fig. 11 A
PRIOR ART

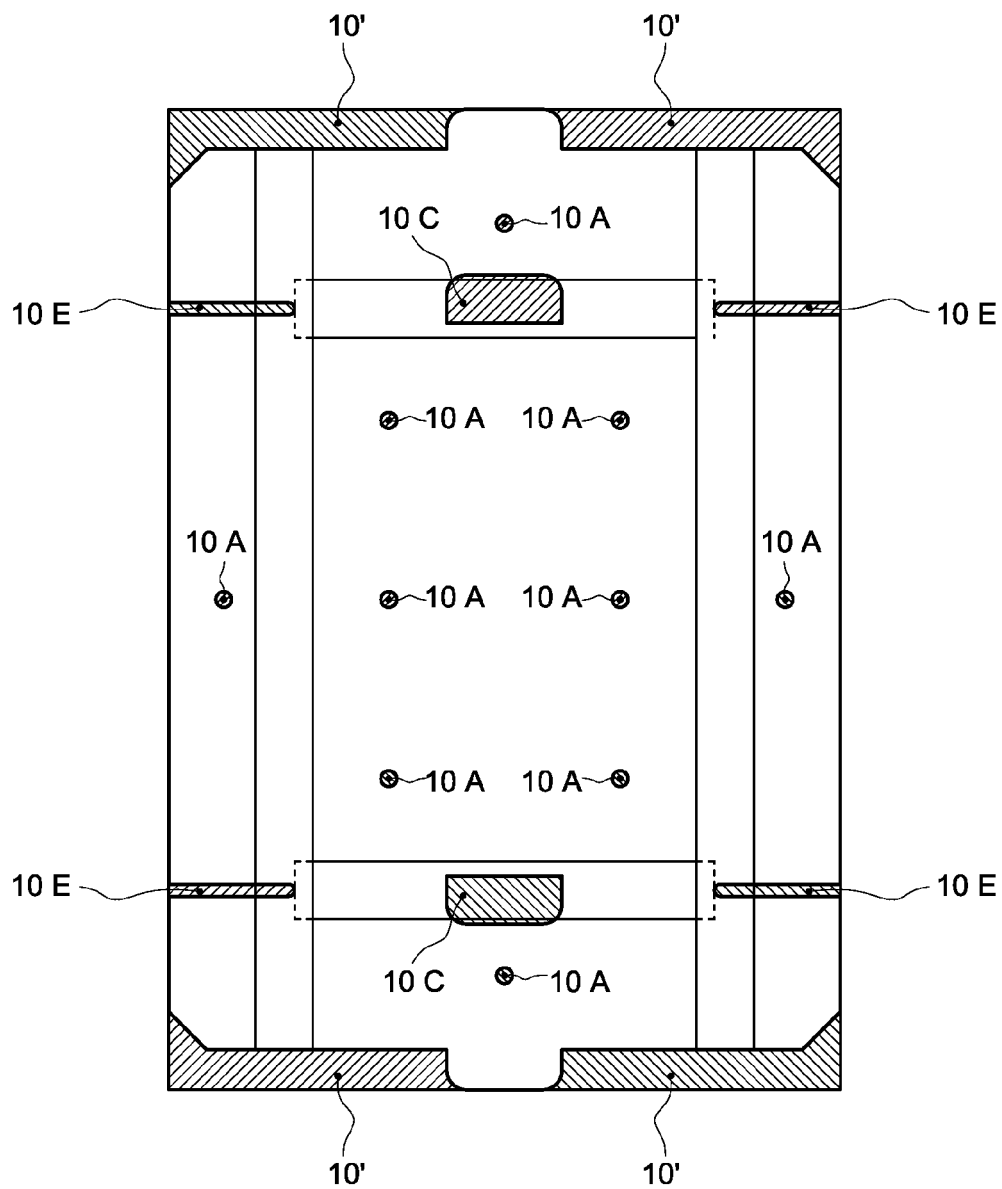


Fig. 12

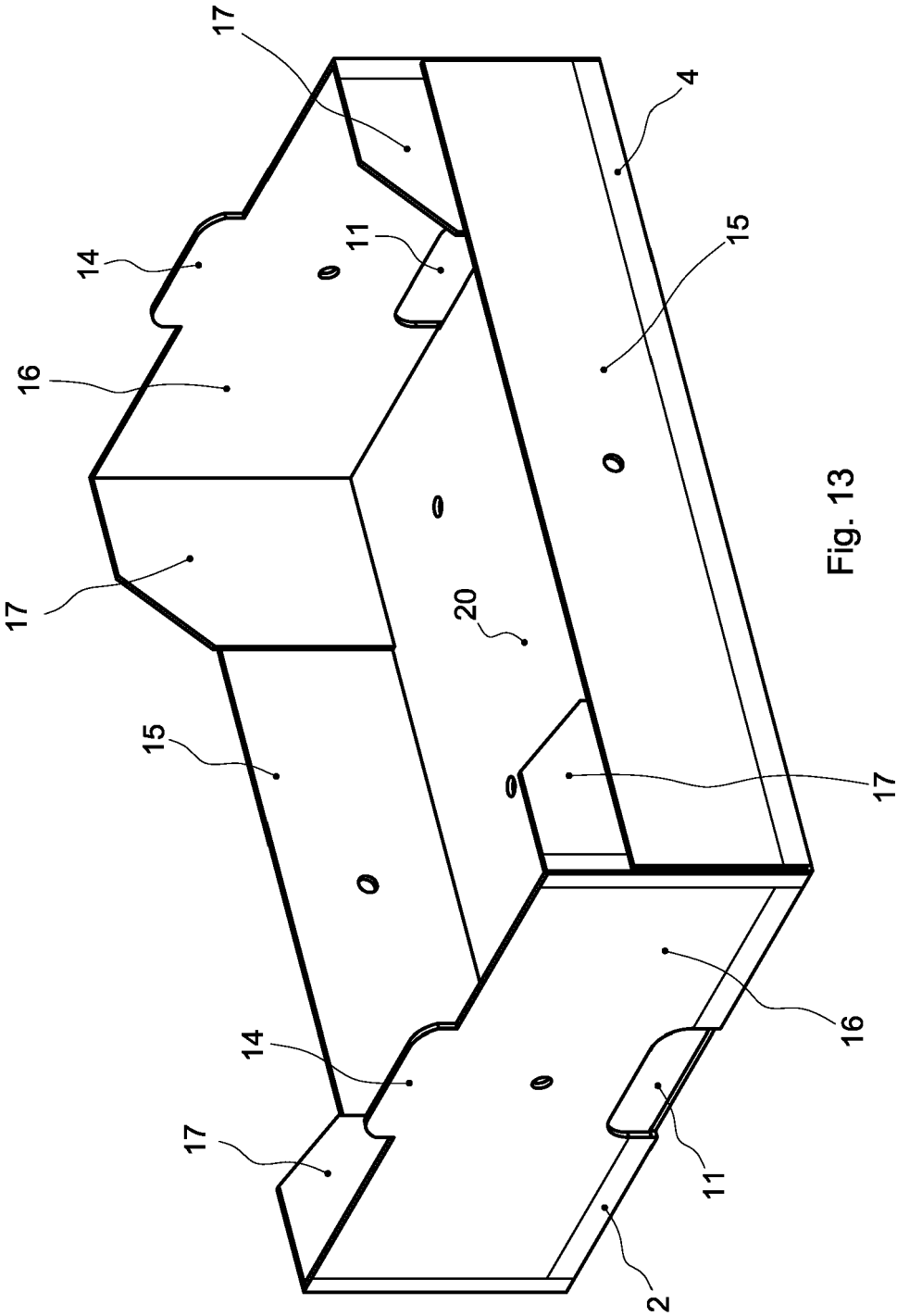


Fig. 13



EUROPEAN SEARCH REPORT

Application Number
EP 11 15 7531

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	FR 1 482 977 A (MAUNAND) 30 August 1967 (1967-08-30) * page 1, left-hand column, line 1 - page 2, right-hand column, line 15 * * figure 2 *	1	INV. B65D6/00 B65D6/34 B65B43/34 B31B5/78
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Place of search Munich		Date of completion of the search 5 August 2011	Examiner Rodriguez Gombau, F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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